



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/735,893

12/16/2003

Shuji Nagano

0649-1153PUS1

3545

2292 7590 08/23/2007
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

ESHETE, ZELALEM

ART UNIT

PAPER NUMBER

3748

NOTIFICATION DATE

DELIVERY MODE

08/23/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

mm7

Office Action Summary	Application No.	Applicant(s)	
	10/735,893	NAGANO ET AL.	
	Examiner	Art Unit	
	Zelalem Eshete	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the amendment filed on 6/28/2007 and RCE filed on 7/27/2007.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,3-5,8,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanshin (JP2001336407) in view of Hara (5,682,847) and further in view of Voll (4,713,704).

Regarding claims 1,8: Sanshin discloses a valve system for an internal combustion engine (see figure 2), comprising: an intake-side rocker shaft having a first oil channel extending in a longitudinal direction thereof (see numeral 33); an exhaust-side rocker shaft having a second oil channel extending in a longitudinal direction thereof (see numeral 34); intake-side rocker arms having ends thereof connected to intake valves and supported on said intake-side rocker shaft such that said intake-side rocker arms rock (see numerals 31a,31b,31c), the intake-side rocker arms being driven by intake cams (see numerals 30a,30b,30c); the intake side rocker arm including a first

Art Unit: 3748

rocker arm having an end thereof connected to the intake valve and supported on said intake-side rocker shaft such that said first rocker arm rocks (see numeral 31a), the first rocker arm being driven by a first low-lift cam (see numeral 30a), and a second rocker arm having an end thereof connectable to said first rocker arm and supported on said intake-side rocker shaft such that said second rocker arm rocks (see numeral 31b), the second rocker arm being driven by a high-lift cam causing a larger valve lift than the first low-lift cam (see numeral 30b), and exhaust-side rocker arms having ends thereof connected to exhaust valves and supported on said exhaust-side rocker shaft such that said exhaust-side rocker arms rock (see figures 4,5), the exhaust-side rocker arms being driven by an exhaust cam (see numeral 30d); switching mechanism switching operating characteristics of the intake/exhaust valve (see abstract).

Sanshin fails to disclose the a second rocker arm being adapted to engage with the first rocker arm at an angle substantially perpendicular to a center longitudinal axis of the intake valve; and intake/exhaust side rocker shaft that is provided with the switching mechanism has a larger diameter than the exhaust/intake side rocker shaft.

However, Hara teaches the a second rocker arm being adapted to engage with the first rocker arm at an angle substantially perpendicular to a center longitudinal axis of the intake valve (see figure 1). Hara further teaches that such arrangement provides a stable changeover action between valve actuation states (see column 2, lines 20 to 26).

Furthermore, Voll teaches that shaft which requires a higher stiffness has a larger diameter (see column 4, lines 29 to 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sanshin's device by providing the rocker arrangement as taught by Hara in order to provide a stable changeover action as taught by Hara. It would also have been obvious to one having an ordinary skill in the art to further modify by providing larger diameter for the one provided with the switching mechanism or has higher load and thus requiring greater stiffness as taught by Voll based on the stiffness requirements as taught by Voll in order to reduce unnecessary engine weight through such optimization.

Regarding claim 9: Sanshin as modified above discloses the claimed invention except for reversing the actuating applications of intake and exhaust valve. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the actuating applications of intake and exhaust valve based on the engine design, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Einstein*, 8 USPQ 167.

Regarding claim 3: Sanshin discloses the claimed invention as recited above; and further discloses said intake valves includes a first intake valve and a second intake valve (see figure 4; numeral 25), and said intake-side rocker arms further include a third rocker arm having an end thereof connected said second intake valve and supported on said intake-side rocker shaft such that said third rocker arm rocks (see numeral 31a), the third rocker arm being driven by a second low-lift cam that causes a smaller valve

Art Unit: 3748

than the first low-lift cam (see numeral 30a), a connection switching mechanism that selectively connects or disconnects said second rocker arm to or from said first rocker arm and said third rocker arm (see abstract).

Regarding claim 4: Sanshin discloses said intake side rocker arms includes center pivot type rocker arms with middle parts thereof pivoted by said intake said rocker shaft (see figure 5).

Regarding claim 5: Sanshin discloses said intake side rocker arms and said exhaust side rocker arms are driven by a single cam shaft disposed between said intake side rocker shaft and said exhaust side rocker shaft (see figures 4,5).

3. Claims 6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanshin in view of Voll as applied to claim 3; and further in view of Konno (5,553,584).

Sanshin discloses the claimed invention as recited above except for specifying the type of the roller.

However, Konno teaches the roller is a "double ring type" sliding roller or a roller provided with a needle bearing" as follower of the cam (see figure 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sanshin's device by providing the roller as taught by Konno in order to reduce friction during power transmission from the camshaft.

Response to Arguments

4. Applicant's arguments with respect to claims 1,3-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zelalem Eshete whose telephone number is (571) 272-4860. The examiner can normally be reached on Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zelalem Eshete
Primary Examiner
Art Unit 3748

